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Hearings and Court Action

The applications under consideration have been the subject of two administrative hearings separated by an intervening court action. This decision is based on the records developed during these proceedings. A brief review of each of these proceedings is essential to provide a background for the issues discussed in this decision.

Hearing Before the Board in 1957

During 1957 the State Water Rights Board (hereinafter referred to as the Board) devoted twenty-two days to receiving evidence. After considering the evidence, the Board issued Decision D 884. The Board concluded therein from a consideration of the entire record that approval of the applications of Calleguas Municipal Water District (hereinafter referred to as Calleguas) and portions of the application of United Water Conservation District (hereinafter referred to as United) upon specified conditions would best serve the public interest. Accordingly, Applications 13417, 13417A and 13418 of Calleguas to appropriate water from Sespe Creek were approved although they were junior in time to United's application. Application 12092 of United was approved in part with respect to appropriations from Sespe Creek but made subordinate to the Calleguas permits. The Board also approved appropriations by United from Piru Creek and Santa Clara River, which appropriations are not at issue in this decision.

Court Proceedings

Upon receipt of the Board's decision, United, pursuant to Water Code Section 1360, petitioned the Superior Court of California in and for the County of Ventura for writs of mandate directed to the Board. Orders granting alternative writs of mandate were issued in Action No. 46406 with respect to the part of Decision D 884 "which denies, defers, or makes junior in priority any part of Application No. 12092," and in Action No. 46407 directing the Board to "cancel any permit to appropriate water issued by it to Calleguas...on Applications Nos. 13417, 13417A and 13418." After receipt of certain evidence, a stipulated judgment was entered in the court actions, providing "that those portions of Decision No. D 884...which are before the court in this proceeding, be, and the same are, hereby set aside and annulled and the proceedings and cases are hereby remanded to the State Water Rights Board for reconsideration in the light of the new and additional evidence submitted heretofore to this court and such other evidence as may be brought before the said... Board...." Pursuant to this judgment, the Board on April 10 1961, entered an order which set aside and rescinded for the purpose of reconsideration in the light of new and additional evidence those portions of Decision D 884 which had been before the court. The court did not expressly annul the permits which had been issued to Calleguas, but no other result would be consistent with the judgment, since those portions of the decision which were prerequisite to issuance of the permits were set aside. Consequently, the Board in this decision will order that said permits be canceled.

Hearings Before the Board in 1961 and 1962

Commencing on October 24, 1961, and continuing through May 10, 1962, the Board devoted twenty-three days to receiving new and additional evidence concerning the appropriations requested through the applications. During this period, United submitted petitions to amend Application 12092.

Substance of the Applications

United

Application 12092, filed on September 18, 1947, by Santa Clara Water Conservation District and assigned to United on October 19, 1951, is for a permit to appropriate water year-round from Piru and Sespe Creeks and the Santa Clara River. Water is to be used for domestic, municipal, industrial, irrigation and salinity control* purposes. The place of use consists of all lands within the boundaries of United. Of these lands, approximately 78,500 acres are irrigable.

Table 1 summarizes Application 12092 with respect to quantities of water to be appropriated by storage, first, as proposed in 1957; second, as approved by Decision D 884 and authorized by Permit 11181 (not subject to reconsideration);

*Added by motion of June 18, 1957, and approved by the Board in Decision D 884.

TABLE I

APPROPRIATIONS BY STORAGE
APPLICATION 12092

In acre-feet per annum					
Source and Reservoir	Quantity				
	Applica-	Permit	Court Order	Petition	
	tion (a)	(b)	(c)	(d)	
Piru Creek					
Blue Point (s)	100,000	0			
Santa Felicia (s)	150,000	100,000			
Piru Basin (u)	(e)	(e)			
Sespe Creek					
Hammel (s)	30,000	30,000(f)	(f)		
Topatopa (s)	100,000	(g)	100,000		110,000
Cold Spring (s)	400,000	0	400,000		105,000
Oat Mountain (s)					60,000
Santa Clara River					
Piru Basin (u)	60,000	0			
Fillmore Basin (u)	50,000	0			
Santa Paula Basin (u)	70,000	0			
Montalvo Basin (u)	89,000(h)	89,000(h)			

- (a) Status of application, 1957 hearing.
- (b) Permit 11181 issued February 13, 1958, pursuant to Decision D 884.
- (c) Referred back to Board by court judgment dated March 14, 1961. Only Sespe Creek reservoirs listed. See text explanation.
- (d) Status of application proposed to be modified by petition dated December 15, 1961. Only Sespe Creek reservoirs listed. See text explanation.
- (e) Application requested 80 cfs to be diverted from Piru Creek to Piru Spreading Grounds. Permit 11181 allows 11,800 acre-feet per annum to be stored underground via the Piru Spreading Grounds at a maximum rate of diversion not to exceed 80 cfs.
- (f) Subordinate to permits issued pursuant to Applications 13417, 13417A and 13418. Court Order requires the Board to reconsider this subordination.
- (g) Action deferred.
- (h) Application also requested 375 cfs to be diverted from the Santa Clara River for percolation into Montalvo Basin. Decision D 884 authorized the requested diversion to underground storage but at a maximum rate of 375 cfs, of which 75 cfs may be for direct irrigation use.
- (s) Surface storage.
- (u) Underground storage.

third, the Sespe Creek* storage reservoirs, either not authorized or made junior in priority by Decision D 884; and, fourth, the Sespe Creek reservoirs as proposed to be modified by petition dated December 15, 1961 (Staff 2**).

Calleguas

Applications 13417, 13417A and 13418, filed on October 25, 1949, by Ventura County Flood Control District and assigned to Calleguas on January 10, 1955, are for permits to appropriate year-round from Sespe Creek. Water is to be used for municipal, domestic, irrigation and recreation purposes. The place of use consists of a gross area of 173,000 acres within the boundaries of Calleguas. Of this, approximately 78,000 acres are irrigable (Staff 2).

Table 2 summarizes the Calleguas appropriations by storage, first, as proposed in 1957; second, as revised in 1958 by petition to change place of use; and third, as granted by

*Although the Court judgment called for reconsideration by the Board of all unapproved or deferred parts of Application 12092, counsel for United on September 30, 1961, submitted a "Summary of the Proceedings Prior to the Rehearing" which narrowed the scope of reconsideration requested by it to appropriations from Sespe Creek.

**Exhibits numbered in the 500 series were received in evidence during the court proceedings; those numbered in the 600 series were received by the Board in its rehearing. All other exhibits were received in evidence at the first Board hearing.

TABLE 2
APPROPRIATIONS BY STORAGE
APPLICATIONS 13417, 13417A AND 13418

In acre-feet per annum				
Point of Storage	:	Applications:	Petitions:	Permits
	:	(a)	(b)	(c)
Cold Springs		160,000	160,000	
Coltrell		150,000		
Topatopa			150,000	150,000
Tierra Rejada (d)		300,000	300,000	108,600

- (a) Status of applications - 1957 hearing.
- (b) Petition dated February 6, 1958.
- (c) Permits 11182, 11183 and 11184 issued February 13, 1958, pursuant to Decision D 884 and petition to change place of use.
- (d) Applications requested 400 cfs as the rate of diversion at Tar Creek Diversion Dam to off-stream storage in Tierra Rejada. The rate was reduced to 150 cfs in permits.

Permits 11182, 11183 and 11184. In addition to the quantities to be appropriated by storage presented in Table 2, direct diversion from Sespe Creek at the Tar Creek Diversion Dam at a maximum rate of 400 cubic feet per second (cfs) was requested in the three applications as originally filed. This diversion rate was reduced to 150 cfs in Permits 11182, 11183 and 11184 (Staff 2).

Watershed and Ground Water Basins

The Santa Clara River originates within Los Angeles County on the northern slopes of the San Gabriel Mountains. From its origin, it flows in a general westerly direction about 84 miles to the Pacific Ocean. The total area drained by the Santa Clara River stream system is 1,605 square miles (Staff 6 and 12).

That portion of the watershed involved in these applications is depicted on Plate 1 appended to this decision. Also shown on this map are the boundaries of United and Calleguas, the boundaries of the ground water basins within each District.

The two principal tributaries of the Santa Clara River are Piru and Sespe Creeks which drain large areas lying to the north of the river. Piru Creek originates within northern Ventura County near Pine Mountain. It flows in a general easterly then southerly course about 69 miles to its confluence with the Santa Clara River four miles west of the eastern boundary of United. The area drained by Piru Creek is approximately 424 square miles (Staff 11 and 12).

Sespe Creek originates near the Ventura-Santa Barbara County line on the northern slopes of the San Rafael Mountains. From its origin Sespe Creek courses easterly then southerly about 56 miles to its confluence with the Santa Clara River about ten miles west of the mouth of Piru Creek. The area drained by Sespe Creek is approximately 253 square miles (Staff 11 and 12).

From about two miles east of United's eastern boundary to the community of Saticoy, the Santa Clara River flows through a valley varying in width from one to three miles. The valley is underlain with deep porous, alluvial fill. Surface flows percolate into the alluvium which constitutes ground water reservoirs or basins. These interconnected basins are, from east to west, Piru, Fillmore and Santa Paula (Staff 6 and 12).

West and south of Saticoy the Santa Clara River has deposited a broad alluvial fan. This fan may be divided into two parts: Montalvo Basin where unconfined ground water conditions exist and where there is hydraulic continuity with the Santa Clara River, and the Oxnard Plain where ground water is under artesian pressure. Montalvo Basin acts as a forebay for the Oxnard and Fox Canyon pressure aquifers which underlie the Oxnard Plain (Staff 600, p. I-5).

The shallower Oxnard aquifer is a thick, continuous layer of coarse, gravelly deposits laid down by the Santa Clara River as it traversed the Oxnard Plain. This aquifer extends from its forebay, Montalvo Basin, to beneath the ocean floor. The eastern limit of the aquifer approximates the eastern

boundry of the Oxnard Plain as shown on Plate 1. Its exact northern limit has not been determined, but it is believed to correspond with the present channel of the Santa Clara River. In Montalva Basin the Oxnard aquifer consists of coarser gravels which are about 150 feet thick. The gravels are smaller toward the ocean and become interbedded with silt and clay material. At the coast the aquifer is only about 100 feet thick and the top of the aquifer lies about 250 feet below ground level. Along its western boundary the aquifer consists of several zones of water bearing material separated by clays and silts (Staff 600, pp. II-35 and II-36).

The deeper Fox Canyon aquifer is a predominantly sandy formation of marine origin which extends beneath the entire Coastal Plain and continues beneath the ocean floor. The main sandy zone is from 150 to 250 feet thick and lies over 1,000 feet below ground level. In Montalvo Basin the Fox Canyon aquifer is in contact with the gravels of the Oxnard aquifer. Through this contact, water is recharged into the Fox Canyon aquifer. Exposures of the Fox Canyon aquifer are found along the south flank of South Mountain and along Oak Ridge (Staff 600, pp. II-47 - II-50).

Most ground water pumped from beneath the Oxnard Plain is from the shallower Oxnard aquifer. Relatively few wells in this area penetrate to the deeper Fox Canyon aquifer. North of the Santa Clara River is the Mound Basin where there are no important shallow aquifers. Here, water is also under artesian pressure in deeper confined strata (Staff 600, p. I-5).

Sea Water Intrusion

Oxnard Aquifer

Sea water is invading the Oxnard aquifer under the Oxnard Plain near Port Hueneme. This invasion is the result of a pressure trough created by ground water extractions from the aquifer. The pressure trough, in which the piezometric water surface of the aquifer has remained below sea level almost continuously for the past 16 years, has created a landward gradient which permits sea water intrusion. The rate of sea water advancement approaches 1200 feet per year (Staff 600, pp. III-20 - III-23).

As long as a pressure trough exists below sea level, sea water will continue to intrude into the aquifer. This, in turn, will cause the quality of water extracted from the intruded area to be unsuitable for most uses. In addition, sea water intrusion will prevent the aquifer from being used as a ground water reservoir.

Fox Canyon Aquifer

No wells perforated in only the Fox Canyon aquifer have been abandoned because of intruding sea water. However, the evidence indicates that sea water may be advancing landward in the seaward extensions of this aquifer (Staff 600, pp. III-25 - III-26). Because this aquifer does not receive appreciable recharge, and there are no possibilities of increasing this

recharge to any substantial degree, sea water intrusion cannot be halted without stopping practically all ground water extractions from the aquifer.

Lands Within Each District

United

The boundaries of United have remained unchanged throughout these proceedings. The lands with water requirements included within the District comprise two areas: (1) lower Santa Clara Valley and (2) the Coastal Plain. The lower Santa Clara Valley includes those lands which overlie Piru, Fillmore and Santa Paula Basins. The Coastal Plain includes those lands which overlie Oxnard Plain, Montalvo and Mound Basins and portions of Pleasant Valley and West Las Posas Basins.

Calleguas

Unlike United, the boundaries of Calleguas have changed during the course of these proceedings. On December 14, 1960, lands within Calleguas were annexed to the Metropolitan Water District of Southern California (hereinafter referred to as Metropolitan) (UWCD 604). On February 28, 1961, the City of Oxnard joined both Calleguas and Metropolitan (RT 77 and 78). As a result of its annexation, the City of Oxnard is now within both United and Calleguas Districts.

Water requirements, available supplies and additional water requirements for those lands within the original boundaries of Calleguas exclusive of the City of Oxnard and for those lands

on the Coastal Plain including the City of Oxnard are discussed separately in this decision. Therefore, "Calleguas," when used to denote a particular area, refers only to those lands within the boundaries of Calleguas exclusive of the City of Oxnard, which overlie East Las Posas, Simi, Santa Rosa, Conejo and Tierra Rejada Basins and portions of Pleasant Valley and West Las Posas Basins.

Basic Water Supply

Quantity

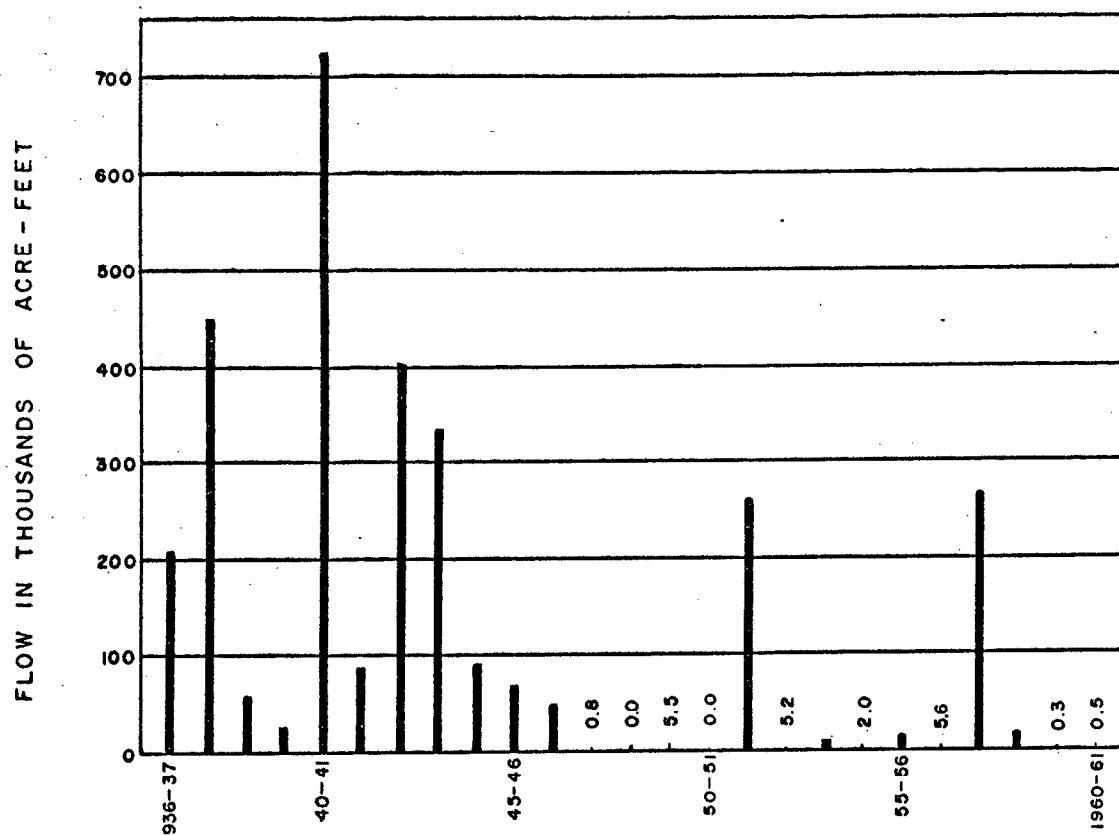
Surface flows of the Santa Clara River system are the result of precipitation in the form of rainfall. Typical of most Southern California streams, flows are very erratic and the annual runoff departs greatly from the long-time mean.

The projects described in the applications propose to conserve a substantial part of those quantities of water that now waste to the ocean. Figure 1 shows graphically the quantities which have historically wasted to the ocean for the water years 1936-1937 through 1960-1961, inclusive (UWCD 610). It is evident from Figure 1 that the conservation of an appreciable amount of such flows will require large cyclic storage capacity.

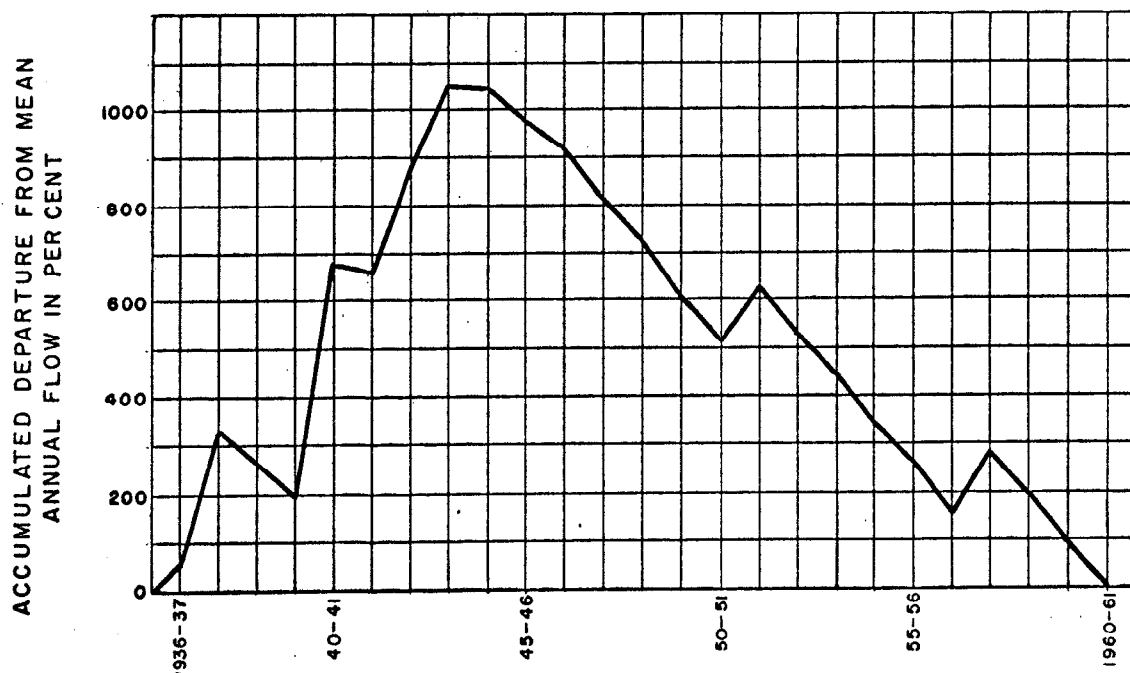
Quality

In general, high surface flows of the Santa Clara River system are of suitable quality for all existing uses. During periods of high flow, total dissolved solids are

Figure 1



FLOW OF SANTA CLARA RIVER DISCHARGING TO OCEAN



ACCUMULATED DEPARTURE FROM MEAN ANNUAL
FLOW OF SANTA CLARA RIVER DISCHARGING TO OCEAN

relatively low in Sespe Creek and only moderate in Piru Creek. However, during periods of low flow (less than 30 cfs) boron concentrations are of such magnitude as to render water from Sespe Creek unsuitable for irrigation of more sensitive crops such as citrus and walnuts (UWCD 513, pp. 69-73).

Ground water in the lower Santa Clara Valley varies from excellent to unsuitable for irrigation purposes but, in general, is suitable for existing agriculture. In some instances certain chemical elements exceed recommended and even maximum limits for domestic use established in the United States Public Health Service Drinking Water Standards (UWCD 513, pp. 83-93). The total quantity of salts contained in the water flowing into these basins exceeds the total quantity of salts contained in the water flowing from these basins, causing adverse salt balance in Fillmore and Santa Paula Basins and to a lesser extent in Piru Basin (Staff 600 pp. V-4 - V-7).

Water quality on most of the Coastal Plain is adequate for most uses, although it has been degraded by subsurface inflows of poor quality, downflow from poor quality semi-perched zones and sea water intrusion near Port Hueneme (UWCD 513, pp. 101-102 and 164-168).

In Calleguas good quality ground water is available from volcanic formations within Tierra Rejada, Conejo and Santa Rosa Basins. In Simi Basin water quality appears to be deteriorating because of reuse. Ground water from the deeper aquifers (Fox Canyon and Grimes) within East and West Las Posas,

Santa Rosa and Pleasant Valley Basins are satisfactory for present use. Available information is insufficient to indicate any quality trends in these aquifers (UWCD 513, pp. 108-118).

Plans for Developing Sespe Creek

United

The plan for development as presently proposed by United contemplates the construction of three reservoirs on Sespe Creek. Cold Spring Dam to be located 38 miles upstream from its mouth will be an earth and gravelfill structure. This dam will create a reservoir having a capacity of 105,000 acre-feet. Downstream from this dam some 21 miles, Topatopa Dam will be constructed. This dam will be a variable-radius, concrete-arch structure creating a reservoir of 110,000 acre-feet. The third reservoir of 60,000 acre-feet capacity will be created by Oat Mountain Dam located 11 miles below Topatopa Dam and six miles upstream from the mouth of Sespe Creek. This dam will be a rockfill structure. The Santa Clara Valley pipeline having a capacity of 175 cfs will extend from Oat Mountain to Saticoy (Staff 12 and UWCD 626). [Reservoirs as proposed by United during the 1957 hearing were Cold Spring, with 40,000 acre-feet capacity; Topatopa, with 100,000 acre-feet capacity; and Hammel, in lieu of Oat Mountain, with a capacity of 30,000 acre-feet. No pipeline was previously proposed from Oat Mountain or Hammel to Saticoy (RT 6/12/57 Section 1, pp. 14-18).7

These reservoirs are to be operated in conjunction with United's existing facilities which includes Santa Felicia Dam located on Piru Creek about six miles upstream from its mouth. This dam is an earthfill structure creating a reservoir having a capacity of 100,000 acre-feet. Piru Spreading Grounds and Diversion Works are located near the mouth of Piru Creek and have a maximum diversion rate from Piru Creek of 80 cfs (Staff 12 and UWCD 626). United's existing headworks for diverting water from the Santa Clara River is located two miles upstream from Saticoy. At this point water is diverted from the Santa Clara River at a maximum rate of 375 cfs. Part of this water is conveyed directly to approximately 12,800 acres in Pleasant Valley through the Pleasant Valley pipeline having a capacity of 75 cfs. The remaining water is conveyed to the Saticoy and El Rio Spreading Grounds for recharge into Montalvo Basin. Water is pumped from Montalvo Basin at El Rio Spreading Grounds for distribution on the Oxnard Plain through a 42-cfs-capacity pipeline. These diversion works and spreading grounds are referred to as the Lower River System (Staff 12 and UWCD 626).

In United's conjunctive operation of these facilities Montalvo Basin will continue to be used as an underground reservoir to regulate 75,000 acre-feet. Under this plan of operation withdrawals from Montalvo Basin are to be terminated when the depletion equals 75,000 acre-feet at which time the average water level within the basin will be 25 feet above sea level (UWCD 626 and RT 397).

Runoff from Piru Creek stored in Santa Felicia Reservoir will be released as rapidly as possible to meet direct diversion requirements or to recharge Montalvo Basin when underground storage space is available. Runoff from Sespe Creek will be stored in the reservoirs created by Cold Spring, Topatopa and Oat Mountain Dams having a total capacity of 275,000 acre-feet. When surface diversions through the Lower River System plus ground water extractions through pumping facilities at El Rio are not adequate to meet the total surface demand on the Coastal Plain, releases will be made from Oat Mountain, Topatopa and Cold Spring Reservoirs in that order for delivery through the Santa Clara Valley Pipeline (UWCD 626).

According to Robert M. Edmonston, consulting engineer, this conjunctive operation will maintain water level conditions in the lower Santa Clara Valley similar to those which occurred historically and provide 41,000 acre-feet of water for delivery by an enlarged surface distribution system to the Coastal Plain each and every year. Of this quantity, Edmonston claims 30,000 acre-feet will be attributable to the three reservoirs on Sespe Creek (UWCD 626).

In this decision the plan of development for Sespe Creek proposed by United as described above is referred to as the "Tri-dam Project."

Calleguas

The physical facilities necessary to implement the Calleguas development include Topatopa Dam to be constructed

on Sespe Creek to create a reservoir having a capacity of 160,000 acre-feet. The dam will be a zoned earth, rockfill structure. Tar Creek Diversion Dam will be constructed on Sespe Creek nine miles below Topatopa Dam. This concrete gravity structure will divert water into the Sespe Conduit, a combination of pipeline and tunnels, having a capacity of 150 cfs. Water will be conveyed through the Sespe Conduit to Tierra Rajada Reservoir located in the center of Calleguas on Arroyo Santa Rosa. This 200,000 acre-foot reservoir will be formed by a series of zoned earthfill dams and dikes (Staff 12 and UWCD 501).

That portion of Sespe Creek runoff originating above Topatopa Dam which wastes to the ocean with United's existing Santa Felicia Reservoir and Lower River System in operation will be stored in Topatopa Reservoir for later diversion to Tierra Rejada Reservoir. Similarly, flows originating between Topatopa Dam and Tar Creek Diversion Dam would be diverted to Tierra Rejada Reservoir to the limit of the conduit capacity. Calleguas claims that this plan of development will produce an average annual yield of 31,000 acre-feet (UWCD 501).

In this decision the plan of development for Sespe Creek proposed by Calleguas as described above is referred to as the "Calleguas Project."

Unappropriated Water and
Protection of Vested Rights

A prerequisite to the issuance of a permit is the existence of unappropriated water (Water Code Sec. 1375). In

addition, it must be established that the unappropriated water may be taken in the manner proposed by the applicant without adversely affecting vested rights. Both Districts propose to conserve only a portion of those quantities of water which have historically wasted to the ocean. Most of this runoff occurs during the winter and early spring months and cannot be conserved and applied to beneficial use without large cyclic storage facilities. It is clear that the major portion of this waste is unappropriated.

Each District has submitted studies which indicate that its project may be operated in the manner proposed without infringing upon the quantities of water historically diverted under vested rights. Although operation studies which make allowances for historical diversions are the best method available to determine project capabilities, such studies do not provide a basis for establishing final operational criteria to protect vested rights. This is particularly true for riparian and overlying rights because historic use is not necessarily a measure of these rights.

The protection of vested rights without causing waste to the ocean requires a consideration of many factors, including measurements of runoff and waste to the ocean and a determination of factors relating to ground water. A period of actual operation under project conditions would be necessary to evaluate these factors. In the event of export, as proposed by Calleguas, the Board should reserve jurisdiction

during a period of project operation to assure that vested rights would be protected without causing unnecessary waste to the ocean. In the case of United's proposed project, however, the Board need not reserve jurisdiction to protect vested rights since the holders of these rights are all located within the United District and one of its purposes as a conservation district is to protect those rights.

Total Water Requirements

Both United and Calleguas presented evidence concerning water requirements. United presented its evidence through the testimony of James H. Forbes, Jr., President of Forbes, Hillendahl and Associates, an economic and planning research organization. Calleguas presented its evidence through the testimony of Simon Perliter, consulting engineer, and Archie K. Hill, Engineer-Manager for Calleguas. These data are discussed below by geographic area, namely: Calleguas, Coastal Plain and lower Santa Clara Valley.

In considering these requirements, it is important to distinguish between gross and net requirements. Gross requirement is that amount of water needed to be applied to satisfy a given use, such as urban use or irrigation. Net requirement equals gross requirement minus such return flows as are available for reuse.

Calleguas

Urban Requirements. Estimates of total urban requirements submitted by Perliter and Hill are in terms of gross demands (RT 1617-19 and 3237). These witnesses maintain that gross demands

are the proper measure of urban requirements because water extracted from ground water basins within Calleguas after being commingled with return flows from urban use would be of a quality unsuitable for reuse for urban purposes (RT 1628-29 and RT 3237-38). This contention assumes urban return flows would not be available to meet any Calleguas requirements, which has the effect of increasing total Calleguas requirements by the amount of such return flows. If all urban areas within Calleguas were sewered to an ocean outfall, this contention would be correct. However, sewers probably will not extend to an ocean outfall until some time between 1990 and 2000 (RT 3280). Therefore, we believed that urban return flows would be used in Calleguas for irrigation if not for urban purposes. Total water requirements for Calleguas, urban as well as irrigation, needs are properly based on net requirements.

Table 3 contains estimated net urban requirements as calculated by the Board on the basis of population projections of Perliter and Hill and water use data from Bulletin 78.* Perliter used Bulletin 78 in computing his estimate of gross urban requirements (RT 1617-19). This table also contains net urban water requirements as estimated by Forbes. The projection of urban water requirements as calculated on population estimates by Perliter and as given by Forbes are in close agreement and

*Department of Water Resources, "Investigation of Alternate Aqueduct Systems to Serve Southern California" (UWCD 608).

Table 3

COMPARISON OF ESTIMATES OF CALLEGUAS
TOTAL NET WATER REQUIREMENTS

In acre-feet

Year	Calculated	Irrigation by Perliter	Total	Calculated	Irrigation by Hill	Total	Urban by Forbes	Irrigation by Forbes	Total
1	2	3	4	5	6	7	8	9	10
1960	3,400	48,100	51,500	3,000	42,000	45,000	3,000	45,000	48,000
1965	5,800	62,700	68,500	8,400	52,600	61,000	5,200	40,000	45,200
1970	10,100	67,000	77,100	12,900	63,000	75,900	8,000	35,500	43,500
1975	13,900	64,200	78,100	17,400	70,000	87,400	12,000	32,500	44,500
1980	18,100	61,500	79,600	21,900	70,700	92,600	18,000	30,000	48,000

Col. 2 - Calculated by Board from population data furnished by Perliter (RT 1273 and 1614) and net unit water use, Bulletin 78, Appendix D, Table 41, p. 177 (UWCD 608)

Col. 3 - CMWD 610

Col. 4 - Col. 2 + Col. 3

Col. 5 - Calculated by Board from population data furnished by Hill (CMWD 648) and net unit water use, Bulletin 78, Appendix D, Table 41, p. 177 (UWCD 608)

Col. 6 - CMWD 648

Col. 7 - Col. 5 + Col. 6

Col. 8 - UWCD 609, p. II-39

Col. 9 - UWCD 609, p. II-42

Col.10 - Col. 8 + Col. 9

probably represent the proper magnitude of future urban requirements for Calleguas. It is reasonable to assume the maximum of these two projections as the future urban requirement.

Irrigation Requirements. All three witnesses used the irrigable acreage presented in the proposed feasibility report of the United States Bureau of Reclamation on the Calleguas Project (UWCD 501) as a basis for predicting future irrigation requirements within Calleguas. However, they disagree on the actual acreage which will be irrigated in the future. Net irrigation requirements estimated by Perliter, Hill and Forbes are also presented in Table 3.

Provided water is physically available, they agree that the cost of water does not control the nature or extent of agricultural development within the District. Forbes maintains that when imported supplemental water is available, land values will increase greatly and prevent irrigation of new lands (UWCD 609, p. II-25). Perliter and Hill do not disagree but assert that present landowners are not irrigating because of an inadequate water supply. They further assert that when water becomes available, present landowners will irrigate their land because the landowners will not have to purchase land at the then current high prices (RT 1522-26 and 3138). Forbes agrees with this principle (UWCD 609, p. II-33) but contends that urban encroachment will result in a decline of the irrigated acreage in about the same proportion as acreage is required for future urban expansion (UWCD 609, pp. II-33 and II-34). Perliter and Hill believe a larger part of this urban growth will be on nonirrigable land (RT 1511-16 - 3139).

Irrigated acreage projections made by Perliter are based on unpublished data obtained from the Department of Water Resources (RT 1555). These figures do not appear to be consistent with the data contained on Sheet 5 of Plate 3, Appendix D, Bulletin No. 78. This plate shows approximately 4,000 acres of new lands will be irrigated between 1958 and 1980, but it also shows that approximately 10,000 acres of land irrigated in 1958 will be devoted to urban use by 1980 (UWCD 608, Appendix D).

In addition, in a letter dated January 31, 1962, Herbert A. Howlett, then District Engineer, Southern District, Department of Water Resources, indicates that, if the Department were to re-evaluate its projections of water requirements for Calleguas, the results would be a reduction in the projected irrigated acreage. This reduction, according to Howlett, would result because of increased urban land requirements, higher cost for imported water and lower crop payment capacity (UWCD 655).

Projections by Hill of irrigated acreage are the largest. These projections assume that once water is available most irrigable land which is not being utilized by the urban communities will be cultivated and irrigated (RT 3137-41). The total irrigated acreage predicted by Hill would require the irrigation of some lands which have slopes of 30 to 40 per cent (RT 3371). At the same time, population projections by Hill are greater than those of Perliter and Forbes (UWCD 664). Comparison of population growth in Orange County, an agricultural area which has experienced a large population growth during the last 20 years, with crop acreage in the county indicates a definite decline in crop acreage accompanying growth in population (UWCD 672).

In light of the evidence we believe that new agricultural development in Calleguas probably will offset urban encroachment, but it is doubtful that there will be any appreciable increase in the irrigation water requirements. Therefore, the total net water requirements for Calleguas will more nearly approach those set forth in Table 3A.

Coastal Plain

Urban Requirements. Population projections by Perliter and Forbes are for different areas. Projections by Perliter are for that portion of the Oxnard Plain which may be incorporated into the City of Oxnard through future growth and annexations (RT 1243 and CMWD 606). Projections by Forbes include this area and the remainder of the Oxnard Plain, Mound Basin, Montalvo Basin and those portions of West Las Posas and Pleasant Valley Basins within the boundaries of United (UWCD 609). Although the projections are for different areas, the growth rates for the areas are nearly equal. Projected values of net unit urban water requirements presented by Perliter are slightly greater than those used by Forbes. However, population growth used by Perliter is slightly lower and therefore the total urban requirements would be nearly equal for the same area.

Irrigation Requirements. The irrigated area on the Coastal Plain will decline to accommodate urban expansion. Although the areas studied by Perliter and Forbes are different, the rates of decline in comparable portions of these areas are approximately equal. The average irrigation consumptive use

TABLE 3A
STATE WATER RIGHTS BOARD ESTIMATE
OF CALLEGUAS
TOTAL NET WATER REQUIREMENTS

In acre-feet			
Year	Urban	Irrigation	Total
1	2	3	4
1960	3,400	45,000	48,400
1965	5,800	45,000	50,800
1970	10,100	45,000	55,100
1975	13,900	45,000	58,900
1980	18,100	45,000	63,100

Col. 2 - Col. 5, Table 3, Calculated from population data, RT 1273 and 1614, and net unit water use Bulletin 78, Appendix D, Table 41, p. 177 (UWCD 608).

Col. 3 - UWCD 609, p. II-42

Col. 4 - Col. 2 plus Col. 3

factors used by Forbes are comparable to the data contained in Bulletin 78 (UWCD 608) and to the figures contained in a report by Perliter, "Plans for Importing Water--Calleguas, Oxnard Plain, South Ventura Lands and Las Virgenes" (UWCD 602). The net urban and irrigation requirements for the Coastal Plain are believed to approximate those predicted by Forbes as presented in Table 4.

Lower Santa Clara Valley

Water requirements in the lower Santa Clara Valley will not increase appreciably in the foreseeable future and the water supply available in the lower Santa Clara Valley is adequate to meet all requirements (RT 390-92). Therefore, the water requirements for this area will not be considered further.

Additional Water Requirements

Calleguas

Water supplies available to Calleguas include extractions from the underlying ground water basins and water to be imported to the area through facilities of Metropolitan. The net ground water yield for Calleguas without importations is estimated by the United States Bureau of Reclamation to be 27,200 acre-feet per annum. This quantity is supported by Department of Water Resources estimates for some of the basins within the District (Staff 6) and this quantity has been adopted by both Calleguas and United (UWCD 602, p. 40a and UWCD 609, pp. II-45 and II-46).

TABLE 4
COASTAL PLAIN
TOTAL NET WATER REQUIREMENTS

In acre-feet			
Year	Urban	Irrigation	Total
1	2	3	4
1960	18,000	96,500	114,500
1965	22,000	90,500	112,500
1970	29,500	86,000	115,500
1975	36,500	79,000	115,500
1980	50,000	72,000	122,000

Col. 2 - UWCD 609, Table IV-18, p. IV-38

Col. 3 - UWCD 609, Table IV-19, p. IV-39

Col. 4 - UWCD 609, Table IV-20, p. IV-40

In 1960 Calleguas passed a bond issue which will permit construction of facilities to import water into the District through a connection with distribution facilities of Metropolitan. These facilities are a part of a joint project under construction. Water imported from Metropolitan will be divided 57.1 per cent to Calleguas, 19.1 per cent to the City of Oxnard, and 23.8 per cent to Las Virgenes Municipal Water District located south of Calleguas in Los Angeles County (RT 1337).

The water importation facilities from Metropolitan to Calleguas are referred to as the Calleguas Conduit. Initially, the point of connection to Metropolitan's distribution system will be on the Santa Monica Feeder within the City of Glendale. Later it may become necessary for Calleguas to take delivery through a new pipeline from the vicinity of the west portal of Metropolitan's San Rafael Tunnel No. 2. From the point of connection, a pipeline having a capacity of 100 cfs will be constructed to Balboa Junction near Granada Hills (CMWD 615). West of Balboa Junction the size of the pipeline will be increased to a capacity of 105 cfs to Las Virgenes turnout west of the community of Chatsworth (RT 1424). From this point a pipeline having a capacity of 100 cfs will convey water to the east portal of the Santa Susana Tunnel. This tunnel is being constructed and will have a capacity of 365 cfs (RT 1425 and 1442). From the west portal of Santa Susana Tunnel water will be conveyed throughout Calleguas and to the City of Oxnard.

The most significant feature of the project west of the Santa Susana Tunnel is Wood Reservoir which will be constructed near the center of Calleguas. This reservoir will have a capacity of 10,000 acre-feet (CMWD 652). Importation of water through the Calleguas Conduit will vary according to the ability of Metropolitan to supply water through its facilities. Prior to the importation of water from northern California through the State Water Facilities, Calleguas may expect to receive little or no water during the summer months (CMWD 613). Water stored in Wood Reservoir during winter months will be available for use during summer months.

According to Hill, Calleguas (exclusive of Oxnard) may expect to receive 30,000 afa through the Calleguas Conduit prior to the importation of water from northern California, after which the quantity will be limited by Calleguas proportionate share of the capacity of the system; namely, 39,000 acre-feet* (RT 3511-13 and 3567-68). Initial deliveries of water through the State Water Facilities to Metropolitan, according to the "Contract Between the State of California Department of Water Resources and the Metropolitan Water District of Southern California," are estimated to begin about 1972 (UWCD 607). Therefore, it appears valid to assume that water from northern California will be available for delivery through the Calleguas Conduit by 1975 (RT 1430).

*Computed by Board on the basis of Calleguas receiving 57.1 per cent of the water through a 105-cfs capacity conduit west of Balboa Junction, less 10 per cent to allow for maintenance and operational fluctuations.

Table 5 compares the quantities of water available to Calleguas from local sources and Metropolitan import with the total net water requirement. Table 5 indicates that in 1980 there would be 3,100 acre-feet of water available in excess of requirements.

Coastal Plain

Available water supplies on the Coastal Plain include yields from ground water basins, deliveries from United's Lower River System through the Oxnard-Hueneme and Pleasant Valley pipelines, local imports and imports from Metropolitan.

Ground Water Yields. Supplies of ground water available to that portion of the Coastal Plain within the boundaries of United consist of underflow to the Oxnard and Fox Canyon aquifers, yield of Montalvo Basin, downflow from the semi-perched zone to the Oxnard aquifer, and possibly some "unaccounted" water.

With the operation of Santa Felicia Reservoir and the Lower River System by United, the available underflow from Montalvo Basin to the Oxnard aquifer is estimated to be 28,700 afa which is nearly the same as the historical average of 28,000 afa. Approximately 2,000 afa of this underflow has historically recharged the Fox Canyon aquifer (RT 626*; Staff 600, p. IV-10 and UWCD 627). The only other known fresh water underflows to the Coastal Plain aquifers are those from Calleguas to the Fox Canyon aquifer. These underflows are about 2,000 afa from West Las Posas Basin and 3,000 afa from East Las Posas Basin to the Pleasant Valley Basin (Staff 600, p. IV-12).

*Reporters's transcript for April 23, 1957.

TABLE 5
CALLEGUAS
ESTIMATED ADDITIONAL
WATER REQUIREMENTS

In acre-feet

Item	:	1965	:	1970	:	1975	:	1980
	:		:		:		:	
1. Net Requirement		50,800		55,100		58,900		63,100
2. Local Supply		27,200		27,200		27,200		27,200
3. Metropolitan Import		30,000		30,000		39,000		39,000
4. Additional Sup- plemental Water Required		0		0		0		0

Item 1 - Table 3A "State Water Rights Board Estimate of Calleguas
Total Net Water Requirements".

Item 2 - CMWD 602, p. 40a.

Item 3 - The value of 30,000 acre-feet was estimated by Hill (RT 3511-13).
The value of 39,000 acre-feet was computed by the Board on the
basis of Calleguas receiving 57.1 per cent of the water through
a 105-cfs capacity pipeline west of Balboa Junction, less 10 per
cent to allow for maintenance and operational fluctuations (RT 3567-38).

Item 4 - Item 1 minus 2 minus 3.

In addition to comprising the forebay for the Oxnard and Fox Canyon aquifers, Montalvo Basin provides a yield from ground water which adds to the supply of the Coastal Plain. This yield is assumed to equal the historical extractions within the basin because the extractions have not exceeded the available supply. These extractions include 6,700 afa for consumptive use requirements within the basin and 1,700 afa for export from the basin to the Oxnard Plain (Staff 600, p. IV-10 and UWCD 501, p. 56).

A portion of the ground water yield on the Coastal Plain consists of downflow from the semi-perched zone to the Oxnard aquifer. The semi-perched zone has been created by the deep percolation of water applied and of rainfall on the Coastal Plain. This semi-perched zone lies above the so-called "clay cap" which constitutes the upper confinement for the Oxnard aquifer. The "clay cap" consists of silty layers with imbedded lenses of sand and minor gravels. More permeable sandy strata lying above the silty layers form the semi-perched zone. Generally speaking, the "clay cap," because of its low permeability, is an effective barrier to the vertical movement of water between the semi-perched zone and the Oxnard aquifer. However, over prolonged periods of time with pressure in the Oxnard aquifer being less than the water surface in the semi-perched zone, substantial quantities of water can pass through the silty layers. Considerable movement is also permitted through multi-perforated wells, abandoned wells, or improperly cased rotary gravel-packed wells (Staff 600, pp. II-37 - II-45). Three estimates have been made of the quantities of

downflow from the semi-perched zone which add to the ground water supplies within the Oxnard aquifer. The United States Bureau of Reclamation estimated it to be 6,900 afa (RT* 626), investigators J. D. Isherwood and A. F. Pillsbury suggest 14,000 afa (Staff 600, p. II-42) and Dr. John F. Mann, Jr., consulting ground water geologist, assigned a value of 20,000 afa. Dr. Mann concedes that his estimate is quite high (Staff 600, p. IV-11) and in light of his comments regarding the conclusions reached by Isherwood and Pillsbury, his figure is believed excessive, as is the figure suggested by Isherwood and Pillsbury.

With the information available, we assume that downflow from the semi-perched zone to the Oxnard aquifer is between the estimates of the United States Bureau of Reclamation and of Pillsbury and Isherwood, or approximately 10,500 afa. In the future less water will reach the semi-perched zone because as the Coastal Plain becomes more urbanized, less water will be applied to the land for irrigation and more rainfall on impervious roofs and pavements will be diverted to sewers with an ocean outfall. This may also coincide with increased pressure in the Oxnard aquifer because of reduced pumping. Therefore, we believe that the downflow from the semi-perched zone will decline at about the same rate as the irrigation water requirements on the Coastal Plain decline.

Inventories of water supply in the ground water aquifers underlying the Coastal Plain contain an item designated "unaccounted"

*Reporter's transcript for April 23, 1957.

water. This quantity is the difference between the items of inflow and the items of outflow for a ground water inventory of the Oxnard aquifer. The imbalance determined by the United States Bureau of Reclamation is about 8,000 afa (RT* 627), while the imbalance obtained by Dr. Mann is 20,000 afa. Dr. Mann has alternative explanations which separately or in combination may account for this imbalance: (1) estimated quantities of water pumped from the aquifer are too great and (2) estimated inflows are too small (Staff 600, pp. IV-10 and IV-11). Another possibility may be the draining of water from the aquiclude or the so-called "clay cap," into the Oxnard aquifer because of the reduced pressure heads in that aquifer. Dr. Mann maintains that the values of inflow are near maximum and concludes that the imbalance probably is caused, in part, by too great an estimate of pumped extractions. Because "unaccounted" water is an unknown factor, it cannot be considered as part of the firm water supply to the Coastal Plain.

The available ground water supplies on the Coastal Plain are summarized in Table 6.

In addition to those quantities being recharged into the Fox Canyon aquifer, there is contained within the aquifer a large quantity of stored water which should not be considered as part of the long-range annual water supply on the Coastal Plain for the reasons discussed below. The actual quantity of water stored in this aquifer is not known, but Dr. Mann has estimated

* Reporter's transcript for April 23, 1957.

Table 6

COASTAL PLAIN
AVAILABLE GROUND WATER SUPPLIES (1)

Item	In acre-feet				
	1960	1965	1970	1975	1980
Montalvo Net Ground Water Extractions to Satisfy Consumptive Use	6,700	6,700	6,700	6,700	6,700
Exports from Montalvo	1,700	1,700	1,700	1,700	1,700
Underflow from Montalvo (2)	28,700	28,700	28,700	28,700	28,700
Underflow from West Las Posas Basin	2,000	2,000	2,000	2,000	2,000
Underflow from East Las Posas Basin	3,000	3,000	3,000	3,000	3,000
Downflow from Semi-perched Zone (3)	10,500	9,800	9,100	8,400	7,700
TOTAL	52,600	51,900	51,200	50,500	49,800

(1) Except as otherwise indicated, all quantities are taken from Staff 600.

(2) UWCD 627E.

(3) Computed by Board, see discussion pages 33 - 34

six million acre-feet are stored in the landward portion with additional large quantities stored in the seaward extensions (Staff 600, p. VI-9).

Although there is no positive evidence of sea water intrusion into the Fox Canyon aquifer, there is little doubt that intrusion has probably commenced in the seaward extensions. The time that sea water will reach wells penetrating this aquifer is unknown. The Board agrees with Dr. Mann that this reserve supply of water should be used to supplement available supplies on the Coastal Plain until firm water supplies are available, but to attempt to supply a large, growing, urban community with this type of water supply as suggested by Calleguas would not be reasonable. The Board is of the opinion that it is in the public interest to reserve this water supply for future emergencies. The fact that the City of Oxnard, which has wells penetrating this aquifer, joined Calleguas and Metropolitan to obtain a firm water supply at a greater cost tends to support these conclusions (UWCD 606 and RT 2780 and 81).

Deliveries through United's Pipelines and Local Imports. United delivers water to the Coastal Plain through the Oxnard-Hueneme and Pleasant Valley pipelines (UWCD 627). With the operation of the Santa Felicia Reservoir and the Lower River system by United, the average annual deliveries through these pipelines are 9,700 and 11,300 acre-feet, respectively. In addition, water is imported into the Mound Basin from Santa

Paula Basin. Historically, this import has averaged 600 afa, and it is assumed that this importation will continue (UWCD 627).

Importations from Metropolitan. The City of Oxnard which has annexed to Calleguas and Metropolitan is to receive water through the Calleguas Conduit. Oxnard is entitled to receive 19.1 per cent of the imported supply. Prior to the importation of water from northern California, Oxnard may expect to receive up to 10,000 afa*. After the beginning of deliveries of water from northern California, Oxnard is entitled to receive its proportionate share of the capacity of the system; namely, 13,000 afa* (UWCD 606 and RT 3511-13 and 3567-68).

Additional Water Needed on the Coastal Plain. The additional water requirements of the Coastal Plain vary according to the values adopted for the available ground water supplies. The quantities of additional water for the Coastal Plain are presented in Table 7.

Sespe Water and the Coastal Plain

All of the Coastal Plain's additional water requirements could be met by United, since all the Coastal Plain lies within the United District.

In the case of Calleguas, only the City of Oxnard lies within the district's boundaries. Calleguas proposes to

*Computed by Board on the basis of Oxnard receiving 19.1 per cent of the water through the Calleguas Conduit.

TABLE 7
COASTAL PLAIN
ESTIMATED ADDITIONAL
WATER REQUIREMENTS

In acre-feet

Item	1965	1970	1975	1980
1. Requirement	112,500	115,500	115,500	122,000
2. Ground Water Supplies	51,900	51,200	50,500	49,800
3. Existing United Facilities	21,600	21,600	21,600	21,600
4. Metropolitan Import	10,000	10,000	13,000	13,000
5. Additional Water Required	29,000	32,700	30,400	37,600

Item 1 - Table 4, "Coastal Plain, Total Net Water Requirements".

Item 2 - Table 6, "Coastal Plain, Available Ground Water Supplies".

Item 3 - UWCD 627, includes diversion of 600 afa from Santa Paula Basin to Mound Basin.

Item 4 - Computed by Board on the basis of Oxnard receiving 19.1 per cent of the water through the Calleguas Conduit (UWCD 606 and RT 3511-13 and 3567 - 68).

Item 5 - Item 1 less the sum of items 2, 3, and 4.

develop a water supply from the excess flows of Sespe Creek to provide the additional water required within its district. Although Calleguas claims a need in the original portion of the district for water above those quantities which will be available through the Calleguas Conduit as presently being constructed, the evidence demonstrates that additional water will not be needed in this area before the year 1980. From our analysis in the preceding sections it is evident that the only need in the two districts for additional water to the year 1980 is on the Coastal Plain. Calleguas contends that the City of Oxnard may spread over a large portion of the Coastal Plain (RT 1243-44), and therefore the Calleguas may be in a position to serve most of the Coastal Plain's needs for additional water supplies. Water developed by the Calleguas Project could be available to the Coastal Plain, either by direct delivery to the growing City of Oxnard or through an exchange. Therefore, both projects will be compared on the basis of ability to deliver water to the Coastal Plain.

Ability to Proceed

Each District has questioned the other's ability to proceed with developing the excess flows of Sespe Creek. Because of the competing nature of the projects, this ability will be considered to the extent of the available data.

Today's technology would permit construction of almost any dam if construction costs were not considered. Since supply of unappropriated water is physically available,

both the Tri-dam Project and the Calleguas Project are engineeringly feasible. However, we note that the geological conditions at the site of Oat Mountain Dam may force construction cost, to assure safety, so high as to preclude economic justification and financial feasibility. In addition, the water supply for the proposed Cold Spring Reservoir may be questionable because of the lack of complete runoff records. Before final determination is made to construct the Cold Spring Dam, this water supply should be substantiated by additional runoff measurements.

Cost of water developed by United's Tri-dam Project, for delivery to the Coastal Plain at Saticoy, assuming a 40-year amortization period, would vary from \$41 per acre-foot with no interest charges to \$86 per acre-foot with $4\frac{1}{2}$ per cent interest (UWCD 625). The cost of water developed by the Calleguas Project* delivered to Tierra Rejada Reservoir, assuming a 40-year amortization period, would vary from \$48 per acre-foot with no interest charges to \$104 per acre-foot with $4\frac{1}{2}$ per cent interest.

If either District could obtain Federal assistance to build a project on Sespe Creek, it would be in a more favorable position to finance a project because of the lower interest rate. In the event that Federal assistance cannot be obtained, the only practical source of money to finance a project would be through the issuance of bonds.

*Capital costs for Calleguas Project are \$59,263,000 (UWCD 501, p. 93).

United attempted to obtain approval of a bond issue which would have financed the construction of projects on Piru and Sespe Creeks in 1952. This election failed. Later, United obtained approval of a \$10,939,000 bond issue to construct Santa Felicia Dam and the Lower River System (UWCD 42, pp. 16 and 17). In 1960, Calleguas obtained approval for a \$22 million bond issue to construct the Calleguas Conduit (RT 75 and 76). Each District points to these facts as reasons why the other cannot obtain approval of a further bond issue. However, each District points to its own assessed valuation as evidence that it has adequate bonding capacity. United relies on an assessed valuation of about 207 million dollars (UWCD 679) while Calleguas asserts an assessed valuation of about 170 million dollars.

The real test of a district's ability to proceed with a project comes from voter approval of a bond issue or from a firm construction contract of the kind that might be entered into with the Bureau of Reclamation. The foregoing considerations indicate to the Board that each District has possible but not assured ability to proceed with its project.

Operation and Yields of Projects

The accomplishments of the Tri-dam and Calleguas Projects may be obtained by comparing each project's effect on the total usable quantities of water available within the stream system and ground water basins.

Operation of Santa Felicia Reservoir and the Lower River System provides water for delivery to the Coastal Plain through the Pleasant Valley and Oxnard-Hueneme pipelines. United, however, operates these facilities to provide an average delivery of 21,000 afa. This quantity varies from an annual minimum of zero to an annual maximum of 30,180 acre-feet (UWCD 627E). With only these facilities in operation Montalvo Basin would fluctuate about 108,000 acre-feet (UWCD 622) and the average annual underflow from Montalvo Basin into the Oxnard and Fox Canyon aquifers would be 28,700 acre-feet (UWCD 627E).

The Tri-dam Project would provide 41,000 acre-feet for pipeline delivery to the Coastal Plain each and every year (UWCD 629). This quantity would be made available by releasing water from the three reservoirs on Sespe Creek to firm the average annual quantity of 21,000 acre-feet available with only Santa Felicia Reservoir and the Lower River System. In addition to this quantity, 20,000 acre-feet of new water will be made available from the stream system. The Tri-dam Project would reduce the fluctuation in Montalvo Basin to approximately 77,000 acre-feet (UWCD 622) and the average annual underflow from Montalvo Basin into the Oxnard and Fox Canyon aquifers would be 27,400 acre-feet (UWCD 629E).

According to the Bureau of Reclamation studies, the Calleguas Project has a firm annual yield of 31,000 acre-feet (UWCD 501). This figure is based on an assumed repetition of hydrologic conditions for the period 1936-37 through 1955-56

and does not include the water years 1956-57 through 1960-61 which were included in United's studies. If these years were included in the period of analysis, the yield of the Calleguas Project would be reduced because four of the five years were extremely dry. Certainly with the Calleguas Project in operation and diverting its supply from Sespe Creek the supply to the Coastal Plain from Santa Felicia Reservoir and the Lower River System would not exceed the annual average of 21,000 acre-feet as indicated by United's studies (UWCD 627E). The fluctuation of Montalvo Basin with the Calleguas Project in operation would be about 138,000 acre-feet (UWCD 501A) and the average annual underflow from Montalvo Basin to the Oxnard and Fox Canyon aquifers would be reduced to 23,400 acre-feet.

Public Interest Demands Optimum Development

Deficiencies of the Projects

In considering the public interest, the Board finds that both projects as presented have deficiencies.

Considering the Tri-dam Project, the Board finds that construction of a dam at the Oat Mountain site is questionable because of economic consideration due to geologic conditions at this site, the water supply at the Cold Spring site may prove inadequate to warrant construction of a reservoir, and construction of a concrete-arch dam creating a reservoir having a capacity of 110,000 acre-feet at the Topatopa site will not utilize the site to its optimum.

Considering the Calleguas Project, the Board finds that the project will not furnish water to the entire Coastal Plain, nor has it been planned for operation in conjunction with Santa Felicia Reservoir, the Lower River System or Montalvo Basin. In addition, the Calleguas portion of the Coastal Plain has no present need for water beyond that to be supplied the City of Oxnard from Metropolitan. The Board also finds that because of the tunnels and high pressure pipelines, and the large evaporation losses and inundation of valuable agricultural land caused by Tierra Rejada Reservoir, the Calleguas Project is a more costly method of providing water to the Coastal Plain.

Permit Subject to Public Interest

Water Code Section 1253 requires that the Board allow an appropriation only under such terms and conditions as in its judgment will best develop, conserve and utilize the water sought to be appropriated. This is the same test that confronted the Board in 1957 and 1958 as it then weighed the projects of United and Calleguas, but the Board must now consider changed conditions and additional evidence.

The significant changes are that the Calleguas District has joined Metropolitan, and that Metropolitan's Water supply has been firmed by voter approval of the project generally referred to as the Feather River Project. At the time of the Board's earlier decision, both items were only possibilities. The Board must determine which applicant and which project can and will best develop and conserve the unappropriated waters of Sespe Creek for use on the Coastal Plain.

One consideration favors the Calleguas Project: it would provide the assured development of a supply at least equal to if not slightly greater than United's Tri-dam Project.

Several considerations favor United. The present existing need for additional water is on the Coastal Plain, all of which is located within United's boundaries. A water supply developed on Sespe Creek can be transported to the Coastal Plain more economically in the manner proposed by United, which is the only district in a position to serve the entire Coastal Plain. In addition, United is in a position to operate facilities on Sespe Creek in conjunction with Santa Felicia Reservoir, the Lower River System and Montalvo Basin. Conjunctive operation allows a more orderly development of the entire Santa Clara River stream system because flexibility in operation of all facilities will permit greater utilization of streamflows. In addition, conjunctive operation will produce greater yield to the Coastal Plain for each acre-foot of surface storage on Sespe Creek and will also firm water supplies developed by Santa Felicia Reservoir and the Lower River System. Urban areas require uniform water supplies, and with the Coastal Plain becoming more urbanized, it is important that water supplies to this area be on a firm annual basis.

The Board considers the factors which favor the United Project to be of such importance that the Board without hesitation would approve the United Project if there were assurance of full development of Sespe Creek. However, the Board is concerned that if United proceeds with a staged development,

after construction of Topatopa Dam economic considerations may discourage the construction of Cold Spring or Oat Mountain Dams. Failure to conserve the flow of Sespe Creek beyond that which will be accomplished by a 110,000 acre-foot capacity reservoir would not be in the public interest, in the judgment of the Board.

In this water deficient area it is of particular importance that any proposed project make optimum development of the water supply. Optimum development can be assured only if each reservoir site such as Topatopa be utilized to its maximum size as indicated by sound engineering principles and concepts. Topatopa is considered a particular important site because of the factors which make questionable the construction by United of other dams on Sespe Creek.

An analysis of the information contained in the record discloses that a dam at the Topatopa site which creates a reservoir having a capacity of 160,000 acre-feet will produce the maximum yield indicated by sound engineering principles. A reservoir of this capacity will yield about 30,000 afa for pipeline delivery to the Coastal Plain if operated in conjunction with Santa Felicia Reservoir and Montalvo Basin. This quantity is assumed to firm up the average annual quantity of 21,000 acre-feet available with only Santa Felicia Reservoir and the Lower River System and provide an additional 9,000 acre-feet of new water. In the judgment of the Board this yield is about 30 per cent greater than the yield developed by a 110,000 acre-foot reservoir at Topatopa or about 70 per cent of the yield of the Tri-dam Project. As with the Tri-dam Project the fluctuation

of Montalvo Basin would be limited to approximately 75,000 acre-feet and the average annual underflow to the Oxnard and Fox Canyon aquifers would be 28,500 acre-feet (UWCD 626, 627, 628 and 629).

A 160,000 acre-foot reservoir would cost about 65 per cent more than a 110,000 acre-foot reservoir at the Topatopa site. However, this additional cost is only 50 per cent of the cost of constructing both Cold Spring and Oat Mountain Reservoirs. Cost of water from a reservoir of 160,000 acre-foot capacity probably will equal or be less than any other combination of dams on Sespe Creek producing an equivalent or greater yield. In the public interest a reservoir of that capacity and those additional works required to deliver the water to the areas of use must be considered as the minimum development which may be permitted. Construction of a dam of this maximum size will not prevent construction of dams at other sites (Cold Spring, Hammel or Oat Mountain) if water supply and economic studies prove their feasibility. Therefore any permit issued to United will require that Topatopa be constructed to provide a reservoir having a capacity of not less than 160,000 acre-feet. Subject to this condition the Board finds that it would be in the public interest to approve the application of United.

Although Application 12092 as originally filed requests a permit for the appropriation of 520,000 acre-feet by storage on Sespe Creek, neither the application as originally filed nor the petitions filed in 1961 provide for 160,000 acre-feet of storage at the Topatopa site. Likewise neither the application as originally filed nor the petitions filed in 1961 request an

appropriation from Sespe Creek by direct diversion. The operation studies submitted by United clearly indicate that water will be diverted at Oat Mountain for direct use. Enlargement of Topatopa Reservoir will not alter the operational criteria. Before any permit may be issued to United for an appropriation of 160,000 acre-feet by storage at the Topatopa site and an appropriation from Sespe Creek by direct diversion, a new petition will be necessary. Said petition would request amendment of Application 12092 to impound 160,000 acre-feet by storage at Topatopa and to authorize conversion to direct diversion at rates of flow consistent with the proposed operation and within the seasons and quantities of water already proposed to be appropriated by storage. United will be granted 90 days in which to file such a petition, in the absence of which no permit will be issued to United.

Construction Urgency

An urgency does exist for the most expedient development of Sespe Creek. In an area of water shortage no water which feasibly can be conserved and applied to beneficial use should be allowed to waste to the ocean. Therefore, it is necessary that United either proceed with the development or allow someone else to proceed. To prevent any further delay, the Board intends to assure that actual construction work on the physical facilities will begin and be completed within the time allowed. Additional time will be granted for only the most extraordinary reasons which are not within the applicant's power to control.

Licensing Requirements

In order to determine for licensing purposes the quantities of project water beneficially used, it will be necessary to require United to make measurements and studies pertaining to such use. This requirement is set forth in the "Order" which is made a part of this decision.

Effect on Calleguas

The Board, in adopting Decision D 884 on January 15, 1958, concluded that approval of United's prior application would "provide no water for the Calleguas District and might well condemn that portion of Ventura County to economic stagnation." Therefore, the Board determined that it was in the public interest to approve Calleguas applications although they were junior in time.

Calleguas asserts that nothing has altered the situation which existed during the 1957 hearing. Calleguas further maintains that during the 1957 hearing, it was demonstrated that Calleguas will need more water than can be developed from Sespe Creek as proposed in its applications and that in joining Metropolitan Calleguas has merely changed the order in which it proposes to obtain an adequate water supply from different sources. We

believe that circumstances have changed. First, in 1957, Calleguas had not joined Metropolitan, and no evidence was presented indicating that this would be accomplished. Secondly, in 1957, because no money was available for construction, importation of water from northern California through the State Water Facilities was still in doubt, particularly as to the expected date of initial delivery.

Construction of the Calleguas Conduit will now permit water to be imported to Calleguas from Metropolitan's existing facilities and from the State Water Facilities. Delivery of water through Metropolitan's existing system will be available immediately upon completion of the Calleguas Conduit, and water from northern California should be available by 1975. Therefore, Calleguas is not now dependent on water from Sespe Creek to prevent the possibility of "economic stagnation" because other sources of water are now available or will be available in the not too distant future.

If additional water is needed by Calleguas, it probably can be obtained from Metropolitan after water is available from northern California. Because the capital investment for constructing pipelines to utilize the available capacity of the Santa Susana Tunnel is small when compared to the capital cost of constructing the Calleguas project, water from this source should provide the most economic supply of additional water for the Calleguas District.

Conclusions

The evidence indicates and the Board finds that unappropriated water exists in Sespe Creek at times and in sufficient quantities to justify the approval in part of Application 12092; that the uses proposed are beneficial; that such water in general, but with certain exceptions and subject to certain conditions, may be taken and used as proposed without interference with prior rights; and that the application should be approved and permit issued pursuant thereto subject to the terms and conditions set forth in the following Order. The Board finds that as so conditioned, the project to be developed pursuant to Application 12092 will best develop, conserve and utilize in the public interest the water sought to be appropriated.

For the reasons indicated in this decision the Board concludes that Permits 11182, 11183 and 11184 should be revoked and that Applications 13417, 13417A and 13418 should be canceled.

ORDER

IT IS HEREBY ORDERED that Application 12092 be, and the same is, approved in part, and that upon amendment of the application by petition as provided in this decision a permit be issued to the applicant subject to vested rights and to the following limitations and conditions:

1. The quantity of water to be appropriated shall be limited to the quantity which can be beneficially used and shall not exceed the following:

(a) 325,000 acre-feet per annum by storage from Sespe Creek to be impounded in Topatopa, Cold Spring and Oat Mountain Reservoirs;

(b) 175 cubic feet per second by direct diversion from Sespe Creek at Oat Mountain Dam.

2. The season of diversion to storage and direct diversion shall be year-round.

3. The maximum quantities and rate herein stated may be reduced in the license if investigation warrants.

4. Construction work shall commence on or before December 1, 1967.

5. Construction work shall be completed on or before December 1, 1972.

6. Complete application of the water to the proposed use shall be made on or before December 1, 1980.

7. Progress reports shall be filed promptly by permittee on forms which will be provided annually by the State Water Rights Board until license is issued; provided, however, that until construction work commences permittee shall file at least once every six months from the date of this decision a report showing that it is proceeding with diligence to take all action necessary and preliminary to construction of the project. These reports shall include copies of engineering, economic and financial feasibility reports when such items are completed.

8. In accordance with Water Code Section 1393, the permittee shall clear the sites of the proposed reservoirs of all structures, trees, and other vegetation which would interfere with the use of the reservoirs for water storage and recreation purposes.

9. All rights and privileges under this permit, including method of diversion, method of use, and quantity of water diverted are subject to the continuing authority of the State Water Rights Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of said waters.

10. Permittee shall allow representatives of the State Water Rights Board, and other parties as may be authorized from time to time by said Board, reasonable access to the project works to determine compliance with the terms of this permit.

11. This permit shall be subject to "Memorandum of Agreement for the Protection, Preservation and Enhancement of the Fish, Wildlife, and Associated Recreational Resources of the Santa Clara River and Tributaries" entered into between the California Department of Fish and Game and United Water Conservation District filed of record as Fish and Game Exhibit 601, to the extent the provisions of said Memorandum relate to matters within jurisdiction of the State Water Rights Board.

12. Permittee shall release water into Sespe Creek in such quantities and at such times and rates as will be sufficient, together with inflow from downstream tributary sources, to supply downstream diversions of the surface flow under vested prior rights substantially to the extent water would have been available for such diversions from flow unregulated by permittee's works and also sufficient to maintain the natural percolation of water substantially to the extent percolation would have occurred from flow unregulated by permittee's works.

13. Upon request of the Board, permittee shall make such measurements and maintain and furnish to the Board such records and information as may be necessary to determine

compliance with the terms and conditions of the permit, including recognition of vested rights, and for the further purpose of determining the quantities of water placed to beneficial use under the permit. Permittee shall submit to the Board with the annual progress reports, or at such other times as the Board may require, a report of investigations, measurements, and studies of the results thereof, including but not limited to the following:

- (a) Daily inflow to Cold Spring, Topatopa and Oat Mountain Reservoirs;
- (b) Daily discharge through and over Cold Spring, Topatopa and Oat Mountain Dams;
- (c) Daily changes in reservoir storage in Cold Spring, Topatopa and Oat Mountain Reservoirs;
- (d) Daily deliveries through the Santa Clara Valley pipeline from Oat Mountain Dam to Saticoy.

14. No permit shall be issued on Application 12092 until and unless the applicant, within 90 days of this decision, files a petition to authorize construction by it of a reservoir at the Topatopa site with a capacity of at least 160,000 acre-feet.

15. The State Water Rights Board reserves jurisdiction to extend the times herein set forth for cause, acting in the public interest, or to modify the requirements hereof with respect to the minimum project to be built by permittee.

IT IS FURTHER ORDERED that (1) Permits 11182, 11183 and 11184, heretofore issued to Calleguas Municipal Water District on its Applications 13417, 13417A and 13418, be and the same are, revoked, and (2) Applications 13417, 13417A and 13418 be, and the same are, denied.

Adopted as the decision and order of the State Water Rights Board at a meeting duly called and held at Sacramento, California, this 29 day of April, 1963.

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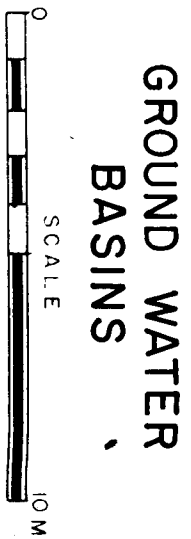
Kent Silverthorne, Chairman

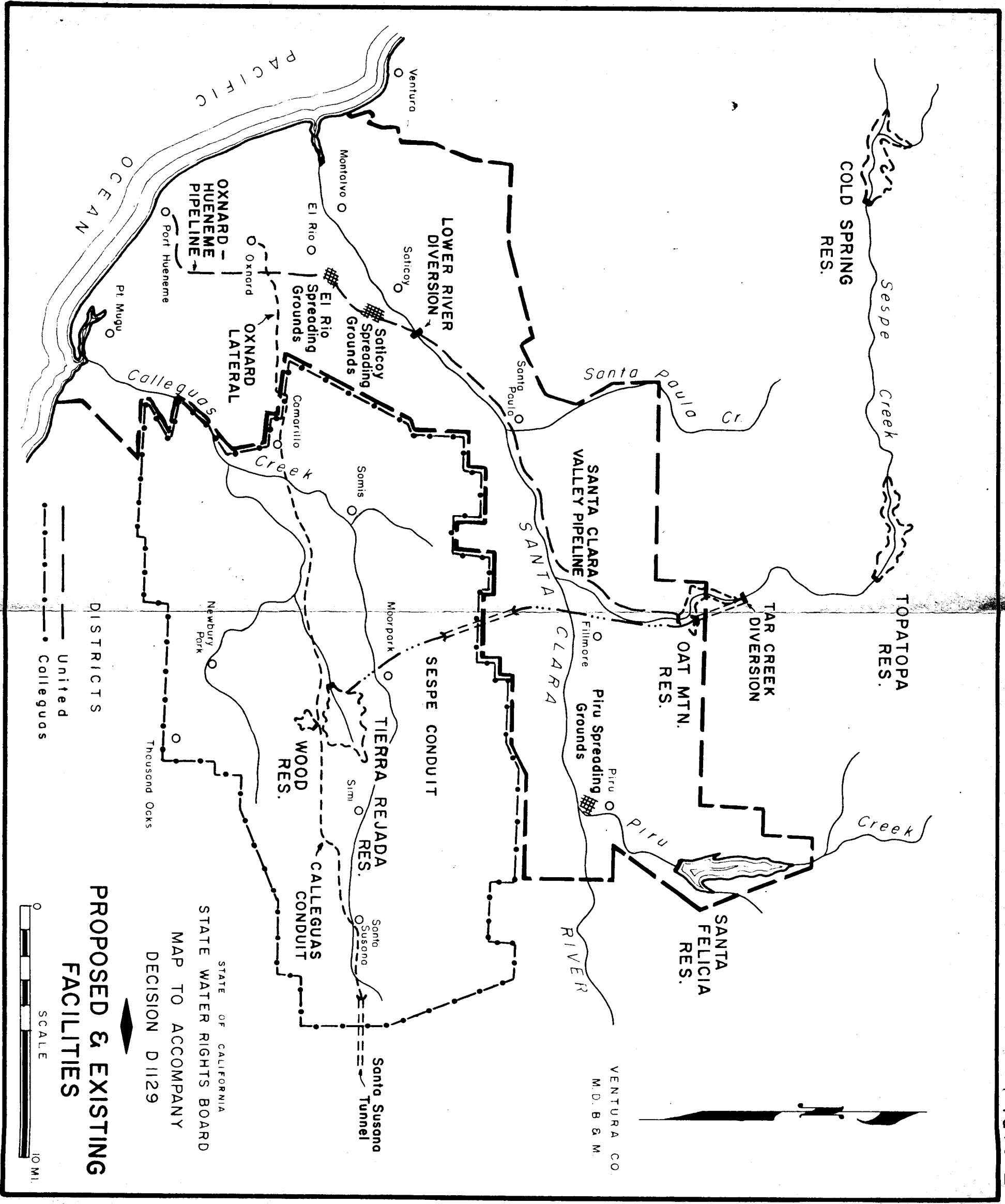
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Ralph J. McGill, Member

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W. A. Alexander, Member





STATE OF CALIFORNIA
STATE WATER RIGHTS BOARD

ADOPTED APR 29 1963

In the Matter of Application 12092 of
United Water Conservation District
and Applications 13417, 13417A and
13418 of Calleguas Municipal Water
District to Appropriate from Sespe
Creek in Ventura County

Decision D 1129

DECISION APPROVING THE APPLICATION OF UNITED WATER CONSERVATION
DISTRICT IN PART AND DENYING APPLICATIONS OF CALLEGUAS MUNICIPAL
WATER DISTRICT